Telemetric Biological Imaging

Problem Statement

- There is currently no flight-ready biological imaging technology proven for the sub-orbital flight environment.
- This flight opportunity will demonstrate imaging hardware functionality in low and elevated gravity environments, particularly the transition to zero.
- Potential users of the matured technology include biology researchers and medical professionals interested in a suborbital flight-experiment platform, as well as parabolic flight applications.

Technology Development Team

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Proposed Flight Experiment

Experiment Readiness:

- September 2012

Test Vehicles:

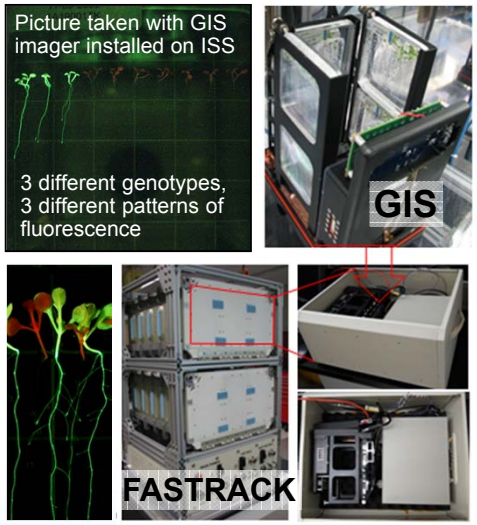
- Suborbital vehicle with middeck locker or similar interface capability

Test Environment:

- Previously flew on Flight Opportunities Program parabolic flights in September 2011, sched 2012

Test Apparatus Description:

- Test apparatus and operator interfaces are incorporated into any middeck locker or equivalent rack. Demo below is FASTRACK middeck locker drawer but similar rack volumes work.



Technology Maturation

- Improved software interface. Full functionality during flight. Clear images during suborbital flight.
- Provide clear images based on flight-associated activation of gene activity associated with gravity transitions.
- Technology maturation deadline is for deployment on suborbital and parabolic science.

Objective of Proposed Experiment

- Biological samples will be imaged in real time during suborbital flight, from wheels-up to landing.
- Fluorescent images will be compared to biochemical data collected (primarily) after landing from parallel samples
- Expected flight data will evaluate the effects of the suborbital flight profile on the performance of the imager and on the gene expression of the reference biological samples.

Technology Areas: TA04, TA06, TA08, TA10